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gaa cac gca gaa gtc acg tac agg gtt tca ggg cag aaa gca gcg gca   1197
Glu His Ala Glu Val Thr Tyr Arg Val Ser Gly Gln Lys Ala Ala Ala
            310                 315                 320

agc ctg cac gag ctg tgt gct gcc aga gtg tca gag gtc ctt caa aac   1245
Ser Leu His Glu Leu Cys Ala Ala Arg Val Ser Glu Val Leu Gln Asn
        325                 330                 335

aga gtg cac agg acg gag gaa gtg aag cat gtg gac ttc tat gct ttc   1293
Arg Val His Arg Thr Glu Glu Val Lys His Val Asp Phe Tyr Ala Phe
    340                 345                 350

tcc tac tat tac gac ctt gca gct ggt gtg ggc ctc ata gat gcg gag   1341
Ser Tyr Tyr Tyr Asp Leu Ala Ala Gly Val Gly Leu Ile Asp Ala Glu
355                 360                 365                 370

aag gga ggc agc ctg gtg gtg ggg gac ttc gag atc gca gcc aag tac   1389
Lys Gly Gly Ser Leu Val Val Gly Asp Phe Glu Ile Ala Ala Lys Tyr
                375                 380                 385

gtg tgt cgg acc ctg gag aca cag ccg cag agc agc ccc ttc tca tgc   1437
Val Cys Arg Thr Leu Glu Thr Gln Pro Gln Ser Ser Pro Phe Ser Cys
            390                 395                 400

atg gac ctc acc tac gtc agc ctg cta ctc cag gag ttc ggc ttt ccc   1485
Met Asp Leu Thr Tyr Val Ser Leu Leu Leu Gln Glu Phe Gly Phe Pro
        405                 410                 415

agg agc aaa gtg ctg aag ctc act cgg aaa att gac aat gtt gag acc   1533
Arg Ser Lys Val Leu Lys Leu Thr Arg Lys Ile Asp Asn Val Glu Thr
    420                 425                 430

agc tgg gct ctg ggg gcc att ttt cat tac atc gac tcc ctg aac aga   1581
Ser Trp Ala Leu Gly Ala Ile Phe His Tyr Ile Asp Ser Leu Asn Arg
435                 440                 445                 450

cag aag agt cca gcc tca tagtggccga gccatccctg tccccgtcag          1629
Gln Lys Ser Pro Ala Ser
                455

cagtgtctgt gtgtctgcat aaaccctcct gtcctggacg tgacttcatc ctgaggagcc 1689

acagcacagg ccgtgctggc actttctgca cactggctct gggacttgca gaaggcctgg 1749

tgctgccctg gcatcagcct cttccagtca catctggcca gagggctgtc tggacctggg 1809

ccctgctcaa tgccacctgt ctgcctgggc tccaagtggg caggaccagg acagaaccac 1869

aggcacacac tgaggggggca gtgtggctcc ctgcctgtcc catccccatg ccccgtccgc 1929

ggggctgtgg ctgctgctgt gcatgtccct gcgatgggag tcttgtctcc cagcctgtca 1989

gtttcctccc cagggcagag ctccccttcc tgcaagagtc tgggaggcgg tgcaggctgt 2049

cctggctgct ctggggaagc cgagggacag ccataacacc cccgggacag taggtctggg 2109

cggcaccact gggaactctg gacttgagtg tgtttgctct tccttgggta tgaatgtgtg 2169
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agttcaccca gaggcctgct ctcctcacac attgtgtggt ttggggttaa tgatggaggg 2229

agacacctct tcatagacgg caggtgccca cctttcaggg agtctcccag catgggcgga 2289

tgccgggcat gagctgctgt aaactatttg tggctgtgct gcttgagtga cgtctctgtc 2349

gtgtgggtgc caagtgcttg tgtagaaact gtgttctgag ccccctttc tggacaccaa 2409

ctgtgtcctg tgaatgtatc gctactgtga gctgttcccg cctagccagg gccatgtctt 2469

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cgggccacca tccgcccacc tcgggctgac cccacctcct ccatggacag tgtgagcccc 2589

gggccgtgca tcctgctcag tgtggcgtca gtgtcggggc tgagcccctt gagctgcttc 2649

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Met Arg Lys Ile Ser Asn His Gly Ser Leu Arg Val Ala Lys Val Ala
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Tyr Pro Leu Gly Leu Cys Val Gly Val Phe Ile Tyr Val Ala Tyr Ile
             20                  25                  30

Lys Trp His Arg Ala Thr Ala Thr Gln Ala Phe Phe Ser Ile Thr Arg
         35                  40                  45

Ala Ala Pro Gly Ala Arg Trp Gly Gln Gln Ala His Ser Pro Leu Gly
     50                  55                  60

Thr Ala Ala Asp Gly His Glu Val Phe Tyr Gly Ile Met Phe Asp Ala
 65                  70                  75                  80

Gly Ser Thr Gly Thr Arg Val His Val Phe Gln Phe Thr Arg Pro Pro
                 85                  90                  95

Arg Glu Thr Pro Thr Leu Thr His Glu Thr Phe Lys Ala Val Lys Pro
            100                 105                 110

Gly Leu Ser Ala Tyr Ala Asp Asp Val Glu Lys Ser Ala Gln Gly Ile
        115                 120                 125

Arg Glu Leu Leu Asp Val Ala Lys Gln Asp Ile Pro Phe Asp Phe Trp
    130                 135                 140

Lys Ala Thr Pro Leu Val Leu Lys Ala Thr Ala Gly Leu Arg Leu Leu
145                 150                 155                 160
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Pro Gly Glu Lys Ala Gln Lys Leu Leu Gln Lys Val Lys Glu Val Phe
165 170 175

Lys Ala Ser Pro Phe Leu Val Gly Asp Asp Cys Val Ser Ile Met Asn
180 185 190

Gly Thr Asp Glu Gly Val Ser Ala Trp Ile Thr Ile Asn Phe Leu Thr
195 200 205

Gly Ser Leu Lys Thr Pro Gly Gly Ser Ser Val Gly Met Leu Asp Leu
210 215 220

Gly Gly Gly Ser Thr Gln Ile Ala Phe Leu Pro Arg Val Glu Gly Thr
225 230 235 240

Leu Gln Ala Ser Pro Pro Gly Tyr Leu Thr Ala Leu Arg Met Phe Asn
245 250 255

Arg Thr Tyr Lys Leu Tyr Ser Tyr Ser Tyr Leu Gly Leu Gly Leu Met
260 265 270

Ser Ala Arg Leu Ala Ile Leu Gly Gly Val Glu Gly Gln Pro Ala Lys
275 280 285

Asp Gly Lys Glu Leu Val Ser Pro Cys Leu Ser Pro Ser Phe Lys Gly
290 295 300

Glu Trp Glu His Ala Glu Val Thr Tyr Arg Val Ser Gly Gln Lys Ala
305 310 315 320

Ala Ala Ser Leu His Glu Leu Cys Ala Ala Arg Val Ser Glu Val Leu
325 330 335

Gln Asn Arg Val His Arg Thr Glu Glu Val Lys His Val Asp Phe Tyr
340 345 350

Ala Phe Ser Tyr Tyr Tyr Asp Leu Ala Ala Gly Val Gly Leu Ile Asp
355 360 365

Ala Glu Lys Gly Gly Ser Leu Val Val Gly Asp Phe Glu Ile Ala Ala
370 375 380

Lys Tyr Val Cys Arg Thr Leu Glu Thr Gln Pro Gln Ser Ser Pro Phe
385 390 395 400

Ser Cys Met Asp Leu Thr Tyr Val Ser Leu Leu Leu Gln Glu Phe Gly
405 410 415

Phe Pro Arg Ser Lys Val Leu Lys Leu Thr Arg Lys Ile Asp Asn Val
420 425 430

Glu Thr Ser Trp Ala Leu Gly Ala Ile Phe His Tyr Ile Asp Ser Leu
435 440 445

Asn Arg Gln Lys Ser Pro Ala Ser
450 455

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Met Phe Thr Val Leu Thr Arg Gln Pro Cys
1 5 10

gag caa gca ggc ctc aag gcc ctc tac cga act cca acc atc att gcc 160
Glu Gln Ala Gly Leu Lys Ala Leu Tyr Arg Thr Pro Thr Ile Ile Ala
15 20 25

ttg gtg gtc ttg ctt gtg agt att gtg gta ctt gtg agt atc act gtc 208
Leu Val Val Leu Leu Val Ser Ile Val Val Leu Val Ser Ile Thr Val
30 35 40

atc cag atc cac aag caa gag gtc ctc cct cca gga ctg aag tat ggt 256
Ile Gln Ile His Lys Gln Glu Val Leu Pro Pro Gly Leu Lys Tyr Gly
45 50 55

att gtg ctg gat gcc ggg tct tca aga acc aca gtc tac gtg tat caa 304
Ile Val Leu Asp Ala Gly Ser Ser Arg Thr Thr Val Tyr Val Tyr Gln
60 65 70

tgg cca gca gaa aaa gag aat aat acc gga gtg gtc agt caa acc ttc 352
Trp Pro Ala Glu Lys Glu Asn Asn Thr Gly Val Val Ser Gln Thr Phe
75 80 85 90

aaa tgt agt gtg aaa ggc tct gga atc tcc agc tat gga aat aac ccc 400
Lys Cys Ser Val Lys Gly Ser Gly Ile Ser Ser Tyr Gly Asn Asn Pro
95 100 105

caa gat gtc ccc aga gcc ttt gag gag tgt atg caa aaa gtc aag ggg 448
Gln Asp Val Pro Arg Ala Phe Glu Glu Cys Met Gln Lys Val Lys Gly
110 115 120

cag gtt cca tcc cac ctc cac gga tcc acc ccc att cac ctg gga gcc 496
Gln Val Pro Ser His Leu His Gly Ser Thr Pro Ile His Leu Gly Ala
125 130 135

acg gct ggg atg cgc ttg ctg agg ttg caa aat gaa aca gca gct aat 544
Thr Ala Gly Met Arg Leu Leu Arg Leu Gln Asn Glu Thr Ala Ala Asn
140 145 150

gaa gtc ctt gaa agc atc caa agc tac ttc aag tcc cag ccc ttt gac 592
Glu Val Leu Glu Ser Ile Gln Ser Tyr Phe Lys Ser Gln Pro Phe Asp
155 160 165 170

tttaggggtgctcaaatcatttctgggcaagaagaagggtatatgga 640
Phe Arg Gly Ala Gln Ile Ile Ser Gly Gln Glu Glu Gly Val Tyr Gly
175 180 185

tgg att aca gcc aac tat tta atg gga aat ttc ctg gag aag aac ctg 688
Trp Ile Thr Ala Asn Tyr Leu Met Gly Asn Phe Leu Glu Lys Asn Leu
190 195 200

tgg cac atg tgg gtg cac ccg cat gga gtg gaa acc acg ggt gcc ctg 736
Trp His Met Trp Val His Pro His Gly Val Glu Thr Thr Gly Ala Leu
205 210 215

gac tta ggt ggt gcc tcc acc caa ata tcc ttc gtg gca gga gag aag 784
Asp Leu Gly Gly Ala Ser Thr Gln Ile Ser Phe Val Ala Gly Glu Lys
220 225 230

atg gat ctg aac acc agc gac atc atg cag gtg tcc ctg tat ggc tac 832
Met Asp Leu Asn Thr Ser Asp Ile Met Gln Val Ser Leu Tyr Gly Tyr
235 240 245 250

gta tac acg ctc tac aca cac agc ttc cag tgc tat ggc cgg aat gag 880
Val Tyr Thr Leu Tyr Thr His Ser Phe Gln Cys Tyr Gly Arg Asn Glu
255 260 265

gct gag aag aag ttt ctg gca atg ctc ctg cag aat tct cct acc aaa 928
Ala Glu Lys Lys Phe Leu Ala Met Leu Leu Gln Asn Ser Pro Thr Lys
270 275 280

aac cat ctc acc aat ccc tgt tac cct cgg gat tat agc atc agc ttc 976
Asn His Leu Thr Asn Pro Cys Tyr Pro Arg Asp Tyr Ser Ile Ser Phe
285 290 295

acc atg ggc cat gta ttt gat agc ctg tgc act gtg gac cag agg cca 1024
Thr Met Gly His Val Phe Asp Ser Leu Cys Thr Val Asp Gln Arg Pro
300 305 310

gaa agt tat aac ccc aat gat gtc atc act ttt gaa gga act ggg gac 1072
Glu Ser Tyr Asn Pro Asn Asp Val Ile Thr Phe Glu Gly Thr Gly Asp
315 320 325 330

cca tct ctg tgt aag gag aag gtg gct tcc ata ttt gac ttc aaa gct 1120
Pro Ser Leu Cys Lys Glu Lys Val Ala Ser Ile Phe Asp Phe Lys Ala
335 340 345

tgc cat gat caa gaa acc tgt tct ttt gat ggg gtt tat cag cca aag 1168
Cys His Asp Gln Glu Thr Cys Ser Phe Asp Gly Val Tyr Gln Pro Lys
350 355 360

att aaa ggg cca ttt gtg gct ttt gca gga ttc tac tac aca gcc agt 1216
Ile Lys Gly Pro Phe Val Ala Phe Ala Gly Phe Tyr Tyr Thr Ala Ser
365 370 375

gct tta aat ctt tca ggt agc ttt tcc ctg gac acc ttc aac tcc agc 1264
Ala Leu Asn Leu Ser Gly Ser Phe Ser Leu Asp Thr Phe Asn Ser Ser
380 385 390

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acc tgg aat ttc tgc tca cag aat tgg agt cag ctc cca ctg ctg ctc   1312
Thr Trp Asn Phe Cys Ser Gln Asn Trp Ser Gln Leu Pro Leu Leu Leu
395                 400                 405                 410

ccc aaa ttt gat gag gta tat gcc cgc tct tac tgc ttc tca gcc aac   1360
Pro Lys Phe Asp Glu Val Tyr Ala Arg Ser Tyr Cys Phe Ser Ala Asn
                415                 420                 425

tac atc tac cac ttg ttt gtg aac ggt tac aaa ttc aca gag gag act   1408
Tyr Ile Tyr His Leu Phe Val Asn Gly Tyr Lys Phe Thr Glu Glu Thr
            430                 435                 440

tgg ccc caa ata cac ttt gaa aaa gaa gtg ggg aat agc agc ata gcc   1456
Trp Pro Gln Ile His Phe Glu Lys Glu Val Gly Asn Ser Ser Ile Ala
        445                 450                 455

tgg tct ctt ggc tac atg ctc agc ctg acc aac cag atc cca gct gaa   1504
Trp Ser Leu Gly Tyr Met Leu Ser Leu Thr Asn Gln Ile Pro Ala Glu
    460                 465                 470

agc cct ctg atc cgt ctg ccc ata gaa cca cct gtc ttt gtg ggc acc   1552
Ser Pro Leu Ile Arg Leu Pro Ile Glu Pro Pro Val Phe Val Gly Thr
475                 480                 485                 490

ctc gct ttc ttc aca gtg gca gcc ttg ctg tgt ctg gca ttt ctt gca   1600
Leu Ala Phe Phe Thr Val Ala Ala Leu Leu Cys Leu Ala Phe Leu Ala
                495                 500                 505

tac ctg tgt tca gca acc aga aga aag agg cac tcc gag cat gcc ttt   1648
Tyr Leu Cys Ser Ala Thr Arg Arg Lys Arg His Ser Glu His Ala Phe
            510                 515                 520

gac cat gca gtg gat tct gac tgagccttca aagcagctcc tggagtccaa      1699
Asp His Ala Val Asp Ser Asp
        525

tggctgctta gagtcagcct gggtggcacc aggcaatgca ggtgaagtgg ctgccttcag 1759

gaaatacaac taactaaaat caaacaccta ggtcacgtgc ctctcaaata ctgatttctg 1819

ccacagcacc tcttgaggca tcccttggct attctgtgca tattgttctt cagagacctc 1879

actacccaca tgctgatcta ttggggaaca gagaagagac aggccactaa ggtcaggctc 1939

tttatattaa gttccccaga ggaagagtaa gttgagaagg tatcagttta atgttgaaga 1999

attgacctca gggctcagtt tccatttccc tccctcagta ttcttcctgg caagataccc 2059

attaagcatt tcgccaatca gaatctcatt ttatagtttt tcccattggt ctttaactaa 2119

gactttcttg tagcaatctc gtaagcagtg aacccccctca gatcagtaga atatagtatc 2179

tgggggagaa gacttacttc cttcagggca gcagccacag ccaggcttct gtcatacagg 2239

tagatcccga agcacagaga cataaaaaag gtctcccaga aaactataga ccattctcca 2299

agtggaattc ccacttaggg ctctggtcac tagattgcaa cctgtgtgtt tgtcatcatc 2359
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ctcatctcac cattgtattg ctatgccctc ccataaaaac acattgatcc ctagcaagat 2419

tattgcattc cagattttac tgcctttgct aggcttttgc ttagcaaagg gctgactttc 2479

cattgttatc atggtgtata tatttttgtc accattccca caagtatact tgatgttgtc 2539

atagaacgaa catcctactc tatgatttac taaccaatta ctttcccaga tcatagacct 2599

ctctgcatag tagtcatagg tcttgacttt ggggaaagaa aaggaagctg caggaatatt 2659

tatctccaaa gtcgaatgag aaagaactcc agcaaatcca atggctacaa actaaaaatc 2719

agcattattt catattgctg tttcttagct gaatatggaa taaagaacta ttattttatt 2779

ttgaaaaaaa aaaaaaaa 2797

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<211> 529
<212> PRT
<213> Homo sapiens

<400> 4

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Met Phe Thr Val Leu Thr Arg Gln Pro Cys Glu Gln Ala Gly Leu Lys
  1               5                  10                  15

Ala Leu Tyr Arg Thr Pro Thr Ile Ile Ala Leu Val Val Leu Leu Val
             20                  25                  30

Ser Ile Val Val Leu Val Ser Ile Thr Val Ile Gln Ile His Lys Gln
         35                  40                  45

Glu Val Leu Pro Pro Gly Leu Lys Tyr Gly Ile Val Leu Asp Ala Gly
     50                  55                  60

Ser Ser Arg Thr Thr Val Tyr Val Tyr Gln Trp Pro Ala Glu Lys Glu
 65                  70                  75                  80

Asn Asn Thr Gly Val Val Ser Gln Thr Phe Lys Cys Ser Val Lys Gly
                 85                  90                  95

Ser Gly Ile Ser Ser Tyr Gly Asn Asn Pro Gln Asp Val Pro Arg Ala
            100                 105                 110

Phe Glu Glu Cys Met Gln Lys Val Lys Gly Gln Val Pro Ser His Leu
        115                 120                 125

His Gly Ser Thr Pro Ile His Leu Gly Ala Thr Ala Gly Met Arg Leu
    130                 135                 140

Leu Arg Leu Gln Asn Glu Thr Ala Ala Asn Glu Val Leu Glu Ser Ile
145                 150                 155                 160

Gln Ser Tyr Phe Lys Ser Gln Pro Phe Asp Phe Arg Gly Ala Gln Ile
                165                 170                 175

Ile Ser Gly Gln Glu Glu Gly Val Tyr Gly Trp Ile Thr Ala Asn Tyr
            180                 185                 190
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Leu Met Gly Asn Phe Leu Glu Lys Asn Leu Trp His Met Trp Val His
195 200 205

Pro His Gly Val Glu Thr Thr Gly Ala Leu Asp Leu Gly Gly Ala Ser
210 215 220

Thr Gln Ile Ser Phe Val Ala Gly Glu Lys Met Asp Leu Asn Thr Ser
225 230 235 240

Asp Ile Met Gln Val Ser Leu Tyr Gly Tyr Val Tyr Thr Leu Tyr Thr
245 250 255

His Ser Phe Gln Cys Tyr Gly Arg Asn Glu Ala Glu Lys Lys Phe Leu
260 265 270

Ala Met Leu Leu Gln Asn Ser Pro Thr Lys Asn His Leu Thr Asn Pro
275 280 285

Cys Tyr Pro Arg Asp Tyr Ser Ile Ser Phe Thr Met Gly His Val Phe
290 295 300

Asp Ser Leu Cys Thr Val Asp Gln Arg Pro Glu Ser Tyr Asn Pro Asn
305 310 315 320

Asp Val Ile Thr Phe Glu Gly Thr Gly Asp Pro Ser Leu Cys Lys Glu
325 330 335

Lys Val Ala Ser Ile Phe Asp Phe Lys Ala Cys His Asp Gln Glu Thr
340 345 350

Cys Ser Phe Asp Gly Val Tyr Gln Pro Lys Ile Lys Gly Pro Phe Val
355 360 365

Ala Phe Ala Gly Phe Tyr Tyr Thr Ala Ser Ala Leu Asn Leu Ser Gly
370 375 380

Ser Phe Ser Leu Asp Thr Phe Asn Ser Ser Thr Trp Asn Phe Cys Ser
385 390 395 400

Gln Asn Trp Ser Gln Leu Pro Leu Leu Leu Pro Lys Phe Asp Glu Val
405 410 415

Tyr Ala Arg Ser Tyr Cys Phe Ser Ala Asn Tyr Ile Tyr His Leu Phe
420 425 430

Val Asn Gly Tyr Lys Phe Thr Glu Glu Thr Trp Pro Gln Ile His Phe
435 440 445

Glu Lys Glu Val Gly Asn Ser Ser Ile Ala Trp Ser Leu Gly Tyr Met
450 455 460

Leu Ser Leu Thr Asn Gln Ile Pro Ala Glu Ser Pro Leu Ile Arg Leu
465 470 475 480

Pro Ile Glu Pro Pro Val Phe Val Gly Thr Leu Ala Phe Phe Thr Val
485 490 495

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Ala Ala Leu Leu Cys Leu Ala Phe Leu Ala Tyr Leu Cys Ser Ala Thr
            500                 505                 510

Arg Arg Lys Arg His Ser Glu His Ala Phe Asp His Ala Val Asp Ser
        515                 520                 525

Asp
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<210> 5
<211> 1998
<212> DNA
<213> Homo sapiens

<220>
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<222> (247)..(1530)

<400> 5

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aaaaagtgat ataataaagg aaccaaggag aaaattcaga aggaaagaaa aaattgcctc 180

tgcaggtgtg cgagcaggat tgcttctgca acaaaagcct ccacccagcc acatcttggg 240

aaaaga atg gcc act tct tgg ggc aca gtc ttt ttc atg ctg gtg gta    288
       Met Ala Thr Ser Trp Gly Thr Val Phe Phe Met Leu Val Val
         1               5                  10

tcc tgt gtt tgc agc gct gtc tcc cac agg aac cag cag act tgg ttt   336
Ser Cys Val Cys Ser Ala Val Ser His Arg Asn Gln Gln Thr Trp Phe
 15                  20                  25                  30

gag ggt atc ttc ctg tct tcc atg tgc ccc atc aat gtc agc gcc agc   384
Glu Gly Ile Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Ser
                 35                  40                  45

acc ttg tat gga att atg ttt gat gca ggg agc act gga act cga att   432
Thr Leu Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Thr Arg Ile
             50                  55                  60

cat gtt tac acc ttt gtg cag aaa atg cca gga cag ctt cca att cta   480
His Val Tyr Thr Phe Val Gln Lys Met Pro Gly Gln Leu Pro Ile Leu
         65                  70                  75

gaa ggg gaa gtt ttt gat tct gtg aag cca gga ctt tct gct ttt gta   528
Glu Gly Glu Val Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val
     80                  85                  90

gat caa cct aag cag ggt gct gag acc gtt caa ggg ctc tta gag gtg   576
Asp Gln Pro Lys Gln Gly Ala Glu Thr Val Gln Gly Leu Leu Glu Val
 95                  100                 105                 110
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gcc aaa gac tca atc ccc cga agt cac tgg aaa aag acc cca gtg gtc   624
Ala Lys Asp Ser Ile Pro Arg Ser His Trp Lys Lys Thr Pro Val Val
                115                 120                 125

cta aag gca aca gca gga cta cgc tta ctg cca gaa cac aaa gcc aag   672
Leu Lys Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu His Lys Ala Lys
            130                 135                 140

gct ctg ctc ttt gag gta aag gag atc ttc agg aag tca cct ttc ctg   720
Ala Leu Leu Phe Glu Val Lys Glu Ile Phe Arg Lys Ser Pro Phe Leu
        145                 150                 155

gta cca aag ggc agt gtt agc atc atg gat gga tcc gac gaa ggc ata   768
Val Pro Lys Gly Ser Val Ser Ile Met Asp Gly Ser Asp Glu Gly Ile
    160                 165                 170

tta gct tgg gtt act gtg aat ttt ctg aca ggt cag ctg cat ggc cac   816
Leu Ala Trp Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly His
175                 180                 185                 190

aga cag gag act gtg ggg acc ttg gac cta ggg gga gcc tcc acc caa   864
Arg Gln Glu Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln
                195                 200                 205

atc acg ttc ctg ccc cag ttt gag aaa act ctg gaa caa act cct agg   912
Ile Thr Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg
            210                 215                 220

ggc tac ctc act tcc ttt gag atg ttt aac agc act tat aag ctc tat   960
Gly Tyr Leu Thr Ser Phe Glu Met Phe Asn Ser Thr Tyr Lys Leu Tyr
        225                 230                 235

aca cat agt tac ttg gga ttt gga ttg aaa gct gca aga cta gca acc   1008
Thr His Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr
    240                 245                 250

ctg gga gcc ctg gag aca gaa ggg act gat ggg cac act ttc cgg agt   1056
Leu Gly Ala Leu Glu Thr Glu Gly Thr Asp Gly His Thr Phe Arg Ser
255                 260                 265                 270

gcc tgt tta ccg aga tgg ttg gaa gca gag tgg atc ttt ggg ggt gtg   1104
Ala Cys Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val
                275                 280                 285

aaa tac cag tat ggt ggc aac caa gaa ggg gag gtg ggc ttt gag ccc   1152
Lys Tyr Gln Tyr Gly Gly Asn Gln Glu Gly Glu Val Gly Phe Glu Pro
            290                 295                 300

tgc tat gcc gaa gtg ctg agg gtg gta cga gga aaa ctt cac cag cca   1200
Cys Tyr Ala Glu Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro
        305                 310                 315

gag gag gtc cag aga ggt tcc ttc tat gct ttc tct tac tat tat gac   1248
Glu Glu Val Gln Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp
    320                 325                 330
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cga gct gtt gac aca gac atg att gat tat gaa aag ggg ggt att tta   1296
Arg Ala Val Asp Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu
335                 340                 345                 350

aaa gtt gaa gat ttt gaa aga aaa gcc agg gaa gtg tgt gat aac ttg   1344
Lys Val Glu Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu
                355                 360                 365

gaa aac ttc acc tca ggc agt cct ttc ctg tgc atg gat ctc agc tac   1392
Glu Asn Phe Thr Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr
            370                 375                 380

atc aca gcc ctg tta aag gat ggc ttt ggc ttt gca gac agc aca gtc   1440
Ile Thr Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val
        385                 390                 395

tta cag ctc aca aag aaa gtg aac aac ata gag acg ggc tgg gcc ttg   1488
Leu Gln Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu
    400                 405                 410

ggg gcc acc ttt cac ctg ttg cag tct ctg ggc atc tcc cat           1530
Gly Ala Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His
415                 420                 425

tgaggccacg tacttccttg gagacctgca tttgccaaca ccttttaag gggaggagag 1590

agcacttagt ttctgaacta gtctgggaca tcctggactt gagcctagag atttaggttt 1650

aattaatttt acacatctaa tgtgaactgc tgcctaacca ctcaagagta cacagctggc 1710

accagagcat cacagagagc cctgtgagcc aaaaagtata gttttggaac ttaaccttgg 1770

agtgagagcc cagggacagg tccctggaaa ccaaagaaaa atcgcatttc aacccttga 1830

gtgcctcatt ccactgaata tttaaatttt cctcttaaat ggtaaactga cttattgcaa 1890

tcccaagacc catcaatatc agtatttttt tcctccctat acagtgccct gcccaccctt 1950

atctgcaccc acctcccctg aaaaagagag aaaaaaaaaa aaaaaaaa              1998
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<210> 6
<211> 428
<212> PRT
<213> Homo sapiens

<400> 6

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Met Ala Thr Ser Trp Gly Thr Val Phe Phe Met Leu Val Val Ser Cys
  1               5                  10                  15

Val Cys Ser Ala Val Ser His Arg Asn Gln Gln Thr Trp Phe Glu Gly
             20                  25                  30

Ile Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Ser Thr Leu
         35                  40                  45

Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Thr Arg Ile His Val
     50                  55                  60
```

```
Tyr Thr Phe Val Gln Lys Met Pro Gly Gln Leu Pro Ile Leu Glu Gly
 65                  70                  75                  80

Glu Val Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val Asp Gln
                 85                  90                  95

Pro Lys Gln Gly Ala Glu Thr Val Gln Gly Leu Leu Glu Val Ala Lys
            100                 105                 110

Asp Ser Ile Pro Arg Ser His Trp Lys Lys Thr Pro Val Val Leu Lys
        115                 120                 125

Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu His Lys Ala Lys Ala Leu
    130                 135                 140

Leu Phe Glu Val Lys Glu Ile Phe Arg Lys Ser Pro Phe Leu Val Pro
145                 150                 155                 160

Lys Gly Ser Val Ser Ile Met Asp Gly Ser Asp Glu Gly Ile Leu Ala
                165                 170                 175

Trp Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly His Arg Gln
            180                 185                 190

Glu Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln Ile Thr
        195                 200                 205

Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg Gly Tyr
    210                 215                 220

Leu Thr Ser Phe Glu Met Phe Asn Ser Thr Tyr Lys Leu Tyr Thr His
225                 230                 235                 240

Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly
                245                 250                 255

Ala Leu Glu Thr Glu Gly Thr Asp Gly His Thr Phe Arg Ser Ala Cys
            260                 265                 270

Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr
        275                 280                 285

Gln Tyr Gly Gly Asn Gln Glu Gly Glu Val Gly Phe Glu Pro Cys Tyr
    290                 295                 300

Ala Glu Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro Glu Glu
305                 310                 315                 320

Val Gln Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp Arg Ala
                325                 330                 335

Val Asp Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu Lys Val
            340                 345                 350

Glu Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Glu Asn
        355                 360                 365
```

```
Phe Thr Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr Ile Thr
    370                 375                 380

Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val Leu Gln
385                 390                 395                 400

Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu Gly Ala
                405                 410                 415

Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His
            420                 425


<210> 7
<211> 2119
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (205)..(1599)

<400> 7
acgttgacac aggaatgaag agtgtattgg ctgaatcttc aagcagaggc gatattgacc 60

atgtgctttt taaattggcc tgcgtgaccc gcccacttgg tgtaaaagaa gaaccggcca 120

aagggagggc ctgaaggacc tccacaggag tgtgagcagc actgcttcag caacaaagcc 180

tcaggtccac atcttgggaa gaat atg gcc act tcc tgg ggg gct gtc ttc    231
                          Met Ala Thr Ser Trp Gly Ala Val Phe
                            1               5

atg ctg atc ata gcc tgc gtt ggc agc act gtc ttc tac aga gaa cag   279
Met Leu Ile Ile Ala Cys Val Gly Ser Thr Val Phe Tyr Arg Glu Gln
 10                  15                  20                  25

cag acc tgg ttt gaa ggt gtc ttc ttg tct tcc atg tgc ccc att aat   327
Gln Thr Trp Phe Glu Gly Val Phe Leu Ser Ser Met Cys Pro Ile Asn
                30                  35                  40

gtc agt gcc ggc acc ttt tat gga att atg ttt gat gcg ggc agc act   375
Val Ser Ala Gly Thr Phe Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr
            45                  50                  55

gga gct cgg att cat gtt tac act ttt gtg cag aaa aca gca gga cag   423
Gly Ala Arg Ile His Val Tyr Thr Phe Val Gln Lys Thr Ala Gly Gln
        60                  65                  70

ctc ccc ttt ctg gaa ggt gaa att ttt gat tct gtg aag ccg gga ctt   471
Leu Pro Phe Leu Glu Gly Glu Ile Phe Asp Ser Val Lys Pro Gly Leu
    75                  80                  85

tct gct ttt gtg gat cag ccc aaa cag ggt gct gag act gtc cag gag   519
Ser Ala Phe Val Asp Gln Pro Lys Gln Gly Ala Glu Thr Val Gln Glu
 90                  95                  100                 105
```

```
ctc ttg gag gtg gcc aaa gac tcg atc ccc aga agc cac tgg gaa agg    567
Leu Leu Glu Val Ala Lys Asp Ser Ile Pro Arg Ser His Trp Glu Arg
                110                 115                 120

acc ccg gtg gtt ctg aaa gca acg gcc gga ctc cgt ttg ctg cct gag    615
Thr Pro Val Val Leu Lys Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu
            125                 130                 135

cag aaa gcc cag gct ctg ctc ttg gag gta gag gag atc ttc aag aat    663
Gln Lys Ala Gln Ala Leu Leu Leu Glu Val Glu Glu Ile Phe Lys Asn
        140                 145                 150

tca cct ttc ctg gtc cca gat ggc agc gtt agc atc atg gat ggg tcc    711
Ser Pro Phe Leu Val Pro Asp Gly Ser Val Ser Ile Met Asp Gly Ser
    155                 160                 165

tat gaa ggc ata cta gcc tgg gtt acc gtg aac ttt cta aca ggt cag    759
Tyr Glu Gly Ile Leu Ala Trp Val Thr Val Asn Phe Leu Thr Gly Gln
170                 175                 180                 185

ctg cat ggt cgt ggc cag gag act gtg ggg acc ctt gac ctg ggg ggt    807
Leu His Gly Arg Gly Gln Glu Thr Val Gly Thr Leu Asp Leu Gly Gly
                190                 195                 200

gcc tcc acc caa atc acg ttt cta ccc cag ttt gag aaa acc ctg gaa    855
Ala Ser Thr Gln Ile Thr Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu
            205                 210                 215

caa aca cct agg ggc tac ctc act tcc ttt gag atg ttt aac agc act    903
Gln Thr Pro Arg Gly Tyr Leu Thr Ser Phe Glu Met Phe Asn Ser Thr
        220                 225                 230

ttt aag ctc tat aca cat agt tac ttg gga ttt gga ctg aaa gct gca    951
Phe Lys Leu Tyr Thr His Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala
    235                 240                 245

aga ctg gca act ctg gga gcc ctg gaa gca aaa ggg act gat gga cat    999
Arg Leu Ala Thr Leu Gly Ala Leu Glu Ala Lys Gly Thr Asp Gly His
250                 255                 260                 265

acg ttt cga agt gcc tgt tta cca aga tgg ttg gaa gca gag tgg atc    1047
Thr Phe Arg Ser Ala Cys Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile
                270                 275                 280

ttt ggg ggt gtg aaa tac cag tat ggt ggt aac caa gaa ggg gag atg    1095
Phe Gly Gly Val Lys Tyr Gln Tyr Gly Gly Asn Gln Glu Gly Glu Met
            285                 290                 295

ggc ttt gaa ccc tgc tat gcg gaa gtg ctg agg gta gta cag ggg aaa    1143
Gly Phe Glu Pro Cys Tyr Ala Glu Val Leu Arg Val Val Gln Gly Lys
        300                 305                 310

ctt cac cag cca gaa gaa gtc cga gga agc gcc ttc tac gct ttc tct    1191
Leu His Gln Pro Glu Glu Val Arg Gly Ser Ala Phe Tyr Ala Phe Ser
    315                 320                 325
```

```
tac tac tac gat cga gcc gct gac aca cac ttg atc gat tat gaa aag   1239
Tyr Tyr Tyr Asp Arg Ala Ala Asp Thr His Leu Ile Asp Tyr Glu Lys
330                 335                 340                 345

ggc ggg gtt tta aaa gtt gaa gat ttt gaa aga aaa gcc aga gaa gtg   1287
Gly Gly Val Leu Lys Val Glu Asp Phe Glu Arg Lys Ala Arg Glu Val
                350                 355                 360

tgt gac aac ttg ggg agc ttc tcc tcg ggc agt cct ttc ctc tgc atg   1335
Cys Asp Asn Leu Gly Ser Phe Ser Ser Gly Ser Pro Phe Leu Cys Met
            365                 370                 375

gac ctc act tac atc aca gcc ctg ttg aaa gat ggt ttg ggc ttt gcc   1383
Asp Leu Thr Tyr Ile Thr Ala Leu Leu Lys Asp Gly Leu Gly Phe Ala
        380                 385                 390

gaa cgg cac cct ctt aca gct cac aaa gaa agt gaa caa cat aga gac   1431
Glu Arg His Pro Leu Thr Ala His Lys Glu Ser Glu Gln His Arg Asp
    395                 400                 405

tgg ttg ggc ctt ggg ggc cac ctt tca cct gct cca gtc tct ggg cat   1479
Trp Leu Gly Leu Gly Gly His Leu Ser Pro Ala Pro Val Ser Gly His
410                 415                 420                 425

cac cag ctg agg cca agc tcc acc tct gaa gcc tgc att tct gaa cca   1527
His Gln Leu Arg Pro Ser Ser Thr Ser Glu Ala Cys Ile Ser Glu Pro
                430                 435                 440

gtt ttc tca cag gaa ggc gtg gac tca gag aca ttt tct gac ctc tct   1575
Val Phe Ser Gln Glu Gly Val Asp Ser Glu Thr Phe Ser Asp Leu Ser
            445                 450                 455

gga aaa gcc tgg ccc gaa acc cgt taactggttt tataaggagg gaggggtttt   1629
Gly Lys Ala Trp Pro Glu Thr Arg
        460                 465

tagatgagtc ttgctcttga gcctagtgat ttgggcttca atgatttgca catctaatgt 1689

gaatagctcc taaccacttg gtgggtgcat ggctggcacc agactgtaaa tcttttggga 1749

ttctttgtac agagtcctgc aaaggaaaaa agagaaaagg tttggaactc catgctagat 1809

tgcgagttca gagacaggtc cctggggacc aaagaacaat ctcgtttcaa cccttggatg 1869

cctcattgct ttgaatggat tcatttttgc ttataagctg atttactgaa atcccataac 1929

ccatcaatgc tgttaatttt tttcttccta cccttattac attccctacc ctaaaagcct 1989

gggggaaata cctggttttg cttcccatct ataattgaga aagaggggg aaaagatact 2049

gtattagaat ttgtgtgatc ctgtggcaca atagatcaac caacccattt aaagcttaaa 2109

aaaaaaaaaa                                                       2119
```

<210> 8
<211> 465
<212> PRT

<213> Mus musculus

<400> 8

```
Met Ala Thr Ser Trp Gly Ala Val Phe Met Leu Ile Ile Ala Cys Val
 1               5                  10                  15

Gly Ser Thr Val Phe Tyr Arg Glu Gln Gln Thr Trp Phe Glu Gly Val
            20                  25                  30

Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Gly Thr Phe Tyr
        35                  40                  45

Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Ala Arg Ile His Val Tyr
    50                  55                  60

Thr Phe Val Gln Lys Thr Ala Gly Gln Leu Pro Phe Leu Glu Gly Glu
65                  70                  75                  80

Ile Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val Asp Gln Pro
                85                  90                  95

Lys Gln Gly Ala Glu Thr Val Gln Glu Leu Leu Glu Val Ala Lys Asp
            100                 105                 110

Ser Ile Pro Arg Ser His Trp Glu Arg Thr Pro Val Val Leu Lys Ala
        115                 120                 125

Thr Ala Gly Leu Arg Leu Leu Pro Glu Gln Lys Ala Gln Ala Leu Leu
    130                 135                 140

Leu Glu Val Glu Glu Ile Phe Lys Asn Ser Pro Phe Leu Val Pro Asp
145                 150                 155                 160

Gly Ser Val Ser Ile Met Asp Gly Ser Tyr Glu Gly Ile Leu Ala Trp
                165                 170                 175

Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly Arg Gly Gln Glu
            180                 185                 190

Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln Ile Thr Phe
        195                 200                 205

Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg Gly Tyr Leu
    210                 215                 220

Thr Ser Phe Glu Met Phe Asn Ser Thr Phe Lys Leu Tyr Thr His Ser
225                 230                 235                 240

Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly Ala
                245                 250                 255

Leu Glu Ala Lys Gly Thr Asp Gly His Thr Phe Arg Ser Ala Cys Leu
            260                 265                 270

Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr Gln
        275                 280                 285
```

```
Tyr Gly Gly Asn Gln Glu Gly Glu Met Gly Phe Glu Pro Cys Tyr Ala
    290                 295                 300

Glu Val Leu Arg Val Val Gln Gly Lys Leu His Gln Pro Glu Glu Val
305                 310                 315                 320

Arg Gly Ser Ala Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp Arg Ala Ala
                325                 330                 335

Asp Thr His Leu Ile Asp Tyr Glu Lys Gly Gly Val Leu Lys Val Glu
            340                 345                 350

Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Gly Ser Phe
        355                 360                 365

Ser Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Thr Tyr Ile Thr Ala
    370                 375                 380

Leu Leu Lys Asp Gly Leu Gly Phe Ala Glu Arg His Pro Leu Thr Ala
385                 390                 395                 400

His Lys Glu Ser Glu Gln His Arg Asp Trp Leu Gly Leu Gly Gly His
                405                 410                 415

Leu Ser Pro Ala Pro Val Ser Gly His His Gln Leu Arg Pro Ser Ser
            420                 425                 430

Thr Ser Glu Ala Cys Ile Ser Glu Pro Val Phe Ser Gln Glu Gly Val
        435                 440                 445

Asp Ser Glu Thr Phe Ser Asp Leu Ser Gly Lys Ala Trp Pro Glu Thr
    450                 455                 460

Arg
465
```

<210> 9
<211> 428
<212> PRT
<213> Homo sapiens

<400> 9

```
Met Ala Thr Ser Trp Gly Thr Val Phe Phe Met Leu Val Val Ser Cys
  1               5                  10                  15

Val Cys Ser Ala Val Ser His Arg Asn Gln Gln Thr Trp Phe Glu Gly
            20                  25                  30

Ile Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Ser Thr Leu
        35                  40                  45

Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Thr Arg Ile His Val
    50                  55                  60

Tyr Thr Phe Val Gln Lys Met Pro Gly Gln Leu Pro Ile Leu Glu Gly
65                  70                  75                  80
```

```
Glu Val Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val Asp Gln
                  85                  90                  95

Pro Lys Gln Gly Ala Glu Thr Val Gln Gly Leu Leu Glu Val Ala Lys
             100                 105                 110

Asp Ser Ile Pro Arg Ser His Trp Lys Lys Thr Pro Val Val Leu Lys
         115                 120                 125

Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu His Lys Ala Lys Ala Leu
     130                 135                 140

Leu Phe Glu Val Lys Glu Ile Phe Arg Lys Ser Pro Phe Leu Val Pro
145                 150                 155                 160

Lys Gly Ser Val Ser Ile Met Asp Gly Ser Asp Glu Gly Ile Leu Ala
                 165                 170                 175

Trp Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly His Arg Gln
             180                 185                 190

Glu Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln Ile Thr
         195                 200                 205

Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg Gly Tyr
     210                 215                 220

Leu Thr Ser Phe Glu Met Phe Asn Ser Thr Tyr Lys Leu Tyr Thr His
225                 230                 235                 240

Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly
                 245                 250                 255

Ala Leu Glu Thr Glu Gly Thr Asp Gly His Thr Phe Arg Ser Ala Cys
             260                 265                 270

Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr
         275                 280                 285

Gln Tyr Gly Gly Asn Gln Glu Gly Glu Val Gly Phe Glu Pro Cys Tyr
     290                 295                 300

Ala Glu Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro Glu Glu
305                 310                 315                 320

Val Gln Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp Arg Ala
                 325                 330                 335

Val Asp Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu Lys Val
             340                 345                 350

Glu Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Glu Asn
         355                 360                 365

Phe Thr Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr Ile Thr
     370                 375                 380
```

```
Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val Leu Gln
385                 390                 395                 400

Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu Gly Ala
                405                 410                 415

Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His
            420                 425
```

<210> 10
<211> 455
<212> PRT
<213> P. sativum

<400> 10

```
Met Glu Leu Leu Ile Lys Leu Ile Thr Phe Leu Leu Phe Ser Met Pro
  1               5                  10                  15

Ala Ile Thr Ser Ser Gln Tyr Leu Gly Asn Asn Leu Leu Thr Ser Arg
             20                  25                  30

Lys Ile Phe Leu Lys Gln Glu Glu Ile Ser Ser Tyr Ala Val Val Phe
         35                  40                  45

Asp Ala Gly Ser Thr Gly Ser Arg Ile His Val Tyr His Phe Asn Gln
     50                  55                  60

Asn Leu Asp Leu Leu His Ile Gly Lys Gly Val Glu Tyr Tyr Asn Lys
 65                  70                  75                  80

Ile Thr Pro Gly Leu Ser Ser Tyr Ala Asn Asn Pro Glu Gln Ala Ala
                85                  90                  95

Lys Ser Leu Ile Pro Leu Leu Glu Gln Ala Glu Asp Val Val Pro Asp
            100                 105                 110

Asp Leu Gln Pro Lys Thr Pro Val Arg Leu Gly Ala Thr Ala Gly Leu
        115                 120                 125

Arg Leu Leu Asn Gly Asp Ala Ser Glu Lys Ile Leu Gln Ser Val Arg
    130                 135                 140

Asp Met Leu Ser Asn Arg Ser Thr Phe Asn Val Gln Pro Asp Ala Val
145                 150                 155                 160

Ser Ile Ile Asp Gly Thr Gln Glu Gly Ser Tyr Leu Trp Val Thr Val
                165                 170                 175

Asn Tyr Ala Leu Gly Asn Leu Gly Lys Lys Tyr Thr Lys Thr Val Gly
            180                 185                 190

Val Ile Asp Leu Gly Gly Gly Ser Val Gln Met Ala Tyr Ala Val Ser
        195                 200                 205

Lys Lys Thr Ala Lys Asn Ala Pro Lys Val Ala Asp Gly Asp Asp Pro
    210                 215                 220
```

```
Tyr Ile Lys Lys Val Val Leu Lys Gly Ile Pro Tyr Asp Leu Tyr Val
225                 230                 235                 240

His Ser Tyr Leu His Phe Gly Arg Glu Ala Ser Arg Ala Glu Ile Leu
                245                 250                 255

Lys Leu Thr Pro Arg Ser Pro Asn Pro Cys Leu Leu Ala Gly Phe Asn
            260                 265                 270

Gly Ile Tyr Thr Tyr Ser Gly Glu Glu Phe Lys Ala Thr Ala Tyr Thr
        275                 280                 285

Ser Gly Ala Asn Phe Asn Lys Cys Lys Asn Thr Ile Arg Lys Ala Leu
    290                 295                 300

Lys Leu Asn Tyr Pro Cys Pro Tyr Gln Asn Cys Thr Phe Gly Gly Ile
305                 310                 315                 320

Trp Asn Gly Gly Gly Gly Asn Gly Gln Lys Asn Leu Phe Ala Ser Ser
                325                 330                 335

Ser Phe Phe Tyr Leu Pro Glu Asp Thr Gly Met Val Asp Ala Ser Thr
            340                 345                 350

Pro Asn Phe Ile Leu Arg Pro Val Asp Ile Glu Thr Lys Ala Lys Glu
        355                 360                 365

Ala Cys Ala Leu Asn Phe Glu Asp Ala Lys Ser Thr Tyr Pro Phe Leu
    370                 375                 380

Asp Lys Lys Asn Val Ala Ser Tyr Val Cys Met Asp Leu Ile Tyr Gln
385                 390                 395                 400

Tyr Val Leu Leu Val Asp Gly Phe Gly Leu Asp Pro Leu Gln Lys Ile
                405                 410                 415

Thr Ser Gly Lys Glu Ile Glu Tyr Gln Asp Ala Ile Val Glu Ala Ala
            420                 425                 430

Trp Pro Leu Gly Asn Ala Val Glu Ala Ile Ser Ala Leu Pro Lys Phe
        435                 440                 445

Glu Arg Leu Met Tyr Phe Val
    450                 455


<210> 11
<211> 454
<212> PRT
<213> Solanum tuberosum

<400> 11
Met Leu Asn Gln Asn Ser His Phe Ile Phe Ile Ile Leu Ala Ile Phe
  1               5                  10                  15

Leu Val Leu Pro Leu Ser Leu Leu Ser Lys Asn Val Asn Ala Gln Ile
             20                  25                  30
```

```
Pro Leu Arg Arg His Leu Leu Ser His Glu Ser Glu His Tyr Ala Val
          35                  40                  45

Ile Phe Asp Ala Gly Ser Thr Gly Ser Arg Val His Val Phe Arg Phe
      50                  55                  60

Asp Glu Lys Leu Gly Leu Leu Pro Ile Gly Asn Asn Ile Glu Tyr Phe
 65                  70                  75                  80

Met Ala Thr Glu Pro Gly Leu Ser Ser Tyr Ala Glu Asp Pro Lys Ala
                 85                  90                  95

Ala Ala Asn Ser Leu Glu Pro Leu Leu Asp Gly Ala Glu Gly Val Val
            100                 105                 110

Pro Gln Glu Leu Gln Ser Glu Thr Pro Leu Glu Leu Gly Ala Thr Ala
        115                 120                 125

Gly Leu Arg Met Leu Lys Gly Asp Ala Ala Glu Lys Ile Leu Gln Ala
    130                 135                 140

Val Arg Asn Leu Val Lys Asn Gln Ser Thr Phe His Ser Lys Asp Gln
145                 150                 155                 160

Trp Val Thr Ile Leu Asp Gly Thr Gln Glu Gly Ser Tyr Met Trp Ala
                165                 170                 175

Ala Ile Asn Tyr Leu Leu Gly Asn Leu Gly Lys Asp Tyr Lys Ser Thr
            180                 185                 190

Thr Ala Thr Ile Asp Leu Gly Gly Gly Ser Val Gln Met Ala Tyr Ala
        195                 200                 205

Ile Ser Asn Glu Gln Phe Ala Lys Ala Pro Gln Asn Glu Asp Gly Glu
    210                 215                 220

Pro Tyr Val Gln Gln Lys His Leu Met Ser Lys Asp Tyr Asn Leu Tyr
225                 230                 235                 240

Val His Ser Tyr Leu Asn Tyr Gly Gln Leu Ala Gly Arg Ala Glu Ile
                245                 250                 255

Phe Lys Ala Ser Arg Asn Glu Ser Asn Pro Cys Ala Leu Glu Gly Cys
            260                 265                 270

Asp Gly Tyr Tyr Ser Tyr Gly Gly Val Asp Tyr Lys Val Lys Ala Pro
        275                 280                 285

Lys Lys Gly Ser Ser Trp Lys Arg Cys Arg Arg Leu Thr Arg His Ala
    290                 295                 300

Leu Lys Ile Asn Ala Lys Cys Asn Ile Glu Glu Cys Thr Phe Asn Gly
305                 310                 315                 320

Val Trp Asn Gly Gly Gly Gly Asp Gly Gln Lys Asn Ile His Ala Ser
                325                 330                 335
```

```
Ser Phe Phe Tyr Asp Ile Gly Ala Gln Val Gly Ile Val Asp Thr Lys
            340                 345                 350

Phe Pro Ser Ala Leu Ala Lys Pro Ile Gln Tyr Leu Asn Ala Ala Lys
        355                 360                 365

Val Ala Cys Gln Thr Asn Val Ala Asp Ile Lys Ser Ile Phe Pro Lys
    370                 375                 380

Thr Gln Asp Arg Asn Ile Pro Tyr Leu Cys Met Asp Leu Ile Tyr Glu
385                 390                 395                 400

Tyr Thr Leu Leu Val Asp Gly Phe Gly Leu Asn Pro His Lys Glu Ile
                405                 410                 415

Thr Val Ile His Asp Val Gln Tyr Lys Asn Tyr Leu Val Gly Ala Ala
            420                 425                 430

Trp Pro Leu Gly Cys Ala Ile Asp Leu Val Ser Ser Thr Thr Asn Lys
        435                 440                 445

Ile Arg Val Ala Ser Ser
    450
```

<210> 12
<211> 473
<212> PRT
<213> Saccharomyces cerevisiae

<400> 12

```
Lys Thr Pro Glu Asp Ile Ser Ile Ile Pro Val Asn Asp Glu Pro Gly
  1               5                  10                  15

Tyr Leu Gln Asp Ser Lys Thr Glu Gln Asn Tyr Pro Glu Leu Ala Asp
            20                  25                  30

Ala Val Lys Ser Gln Thr Ser Gln Thr Cys Ser Glu Glu His Lys Tyr
        35                  40                  45

Val Ile Met Ile Asp Ala Gly Ser Thr Gly Ser Arg Val His Ile Tyr
    50                  55                  60

Lys Phe Asp Val Cys Thr Ser Pro Pro Thr Leu Leu Asp Glu Lys Phe
65                  70                  75                  80

Asp Met Leu Glu Pro Gly Leu Ser Ser Phe Asp Thr Asp Ser Val Gly
                85                  90                  95

Ala Ala Asn Ser Leu Asp Pro Leu Leu Lys Val Ala Met Asn Tyr Val
            100                 105                 110

Pro Ile Lys Ala Arg Ser Cys Thr Pro Val Ala Val Lys Ala Thr Ala
        115                 120                 125

Gly Leu Arg Leu Leu Gly Asp Ala Lys Ser Ser Lys Ile Leu Ser Ala
    130                 135                 140
```

```
Val Arg Asp His Leu Glu Lys Asp Tyr Pro Phe Pro Val Val Glu Gly
145                 150                 155                 160

Asp Gly Val Ser Ile Met Gly Gly Asp Glu Glu Gly Val Phe Ala Trp
                165                 170                 175

Ile Thr Thr Asn Tyr Leu Leu Gly Asn Ile Gly Ala Asn Gly Pro Lys
            180                 185                 190

Leu Pro Thr Ala Ala Val Phe Asp Leu Gly Gly Gly Ser Thr Gln Ile
        195                 200                 205

Val Glu Glu Pro Thr Phe Pro Ile Asn Glu Lys Met Val Asp Gly Glu
    210                 215                 220

His Lys Phe Asp Leu Lys Phe Gly Asp Glu Asn Tyr Thr Leu Tyr Gln
225                 230                 235                 240

Phe Ser His Leu Gly Tyr Gly Leu Lys Glu Gly Arg Asn Lys Val Asn
                245                 250                 255

Ser Val Leu Val Glu Asn Ala Leu Lys Asp Lys Ile Leu Lys Gly Cys
            260                 265                 270

Asn Thr Lys Thr His Cys Leu Ser Ser Pro Cys Leu Pro Pro Lys Val
        275                 280                 285

Asn Ala Thr Asn Glu Lys Val Thr Leu Glu Ser Lys Glu Thr Tyr Thr
    290                 295                 300

Ile Asp Phe Ile Gly Pro Asp Glu Pro Ser Gly Ala Gln Cys Arg Phe
305                 310                 315                 320

Leu Thr Asp Glu Ile Leu Asn Lys Asp Ala Gln Cys Gln Ser Pro Pro
                325                 330                 335

Cys Ser Phe Asn Gly Val His Gln Pro Ser Leu Val Arg Thr Phe Lys
            340                 345                 350

Glu Ser Asn Asp Ile Tyr Ile Phe Ser Tyr Phe Tyr Asp Arg Thr Thr
        355                 360                 365

Arg Pro Leu Gly Met Pro Leu Ser Phe Thr Leu Asn Glu Leu Asn Asp
    370                 375                 380

Leu Ala Arg Ile Val Cys Lys Gly Glu Glu Thr Trp Asn Ser Val Phe
385                 390                 395                 400

Ser Gly Ile Ala Gly Ser Leu Asp Glu Leu Glu Ser Asp Ser His Phe
                405                 410                 415

Cys Leu Asp Leu Ser Phe Gln Val Ser Leu Leu His Thr Gly Tyr Asp
            420                 425                 430

Ile Pro Leu Gln Arg Glu Leu Arg Thr Gly Lys Lys Ile Ala Asn Lys
        435                 440                 445
```

Glu Ile Gly Trp Cys Leu Gly Ala Ser Leu Pro Leu Leu Lys Ala Asp
450 455 460

Asn Trp Lys Cys Lys Ile Gln Ser Ala
465 470

<210> 13
<211> 153
<212> PRT
<213> Homo sapiens

<400> 13
Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr
1 5 10 15

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
20 25 30

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
35 40 45

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
50 55 60

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
65 70 75 80

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
85 90 95

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
100 105 110

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
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Lys Thr Arg Trp Phe Ser Ile Val Pro
145 150

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Gln Leu Leu Glu Glu Cys Gln Val Lys Gly Pro Gly Ile Ser Lys Tyr
35 40 45

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Ala Gln Lys Thr Asp Glu Ile Ala Ala Tyr Leu Ala Glu Cys Met Lys
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Met Ser Thr Glu Arg Ile Pro Ala Ser Lys Gln His Gln Thr Pro Val
 65                  70                  75                  80

Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Lys
                 85                  90                  95

Gln Ser Ala Asp Glu Val Leu Ala Ala Val Ser Arg Ser Leu Lys Ser
            100                 105                 110

Tyr Pro Phe Asp Phe Gln Gly Ala Lys Ile Ile Thr Gly Gln Glu Glu
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Gln Glu Gln Ser Trp Leu Asn Phe Ile Ser
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Gln His Ser Ser Cys Asp Val Pro Gly Gly Gly Ile Ser Ser Tyr Ala
         35                  40                  45

Asp Asn Pro Ser Gly Ala Ser Gln Ser Leu Val Gly Cys Leu Glu Gln
     50                  55                  60

Ala Leu Gln Asp Val Pro Lys Glu Arg His Ala Gly Thr Pro Leu Tyr
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Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Asn Leu Thr Asn Pro Glu
                 85                  90                  95

Ala Ser Thr Ser Val Leu Met Ala Val Thr His Thr Leu Thr Gln Tyr
            100                 105                 110

Pro Phe Asp Phe Arg Gly Ala Arg Ile Leu Ser Gly Gln Glu Glu Gly
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Tyr Gly Trp Val Gly Arg Trp Phe Arg
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35 40 45

Ser Ser Lys Pro Pro Ala Ala Gly Lys Ser Leu Glu His Cys Leu Ser
50 55 60

Gln Ala Met Arg Asp Val Pro Lys Glu Lys His Ala Asp Thr Pro Leu
65 70 75 80

Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Thr Ile Ala Asp Pro
85 90 95

Pro Ser Gln Thr Cys Leu Ser Ala Val Met Ala Thr Leu Lys Ser Tyr
100 105 110

Pro Phe Asp Phe Gly Gly Ala Lys Ile Leu Ser Gly Glu Glu Glu Gly
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Arg Gly Trp Leu Gly Glu
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Thr Leu Ile His Glu Ser Glu Pro Val Val Lys Lys Val Thr Pro Gly
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Leu Ser Ser Phe Gly Asp Lys Pro Glu Gln Val Val Glu Tyr Leu Thr
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Pro Leu Leu Arg Phe Ala Glu Glu His Ile Pro Tyr Glu Gln Leu Gly
65 70 75 80

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Glu Thr Asp Leu Leu Ile Phe Ala Thr Ala Gly Met Arg Leu Leu Pro
                  85                  90                  95

Glu Ala Gln Lys Asp Ala Ile Ile Lys Asn Leu Gln Asn Gly Leu Lys
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Ser Val Thr Ala Leu Arg Val Ser Asp Ser Asn Ile Arg Ile Ile Asp
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No.	Doccode	Number of pages
1	CRFL	6

Total number of pages: 6

Remarks:

Order of re-scan issued on .....

A DOCPHOENIX

BACKFILE DOCUMENT INDEX SHEET

APPL PARTS

_____ IMIS ____
Internal Misc. Paper

_____ LET. ____
Misc. Incoming Letter

_____ 371P ____
PCT Papers in a 371Application

_____ A... ____
Amendment Including Elections

_____ ABST ____
Abstract

_____ ADS ____
Application Data Sheet

_____ AF/D ____
Affidavit or Exhibit Received

_____APPENDIX ____
Appendix

_____ ARTIFACT ____
Artifact

_____ BIB ____
Bib Data Sheet

_____ CLM ____
Claim

_____COMPUTER ____
Computer Program Listing

_____ CRFL____
All CRF Papers for Backfile

_____ DIST ____
Terminal Disclaimer Filed

_____ DRW ____
Drawings

_____ FOR ____
Foreign Reference

_____ FRPR ____
Foreign Priority Papers

_____ IDS ____
IDS Including 1449

_____ NPL ____
Non-Patent Literature

_____ OATH ____
Oath or Declaration

_____ PET. ____
Petition

_____ RETMAIL____
Mail Returned by USPS

_____ SEQLIST ____
Sequence Listing

_____ SPEC ____
Specification

_____ SPEC NO ____
Specification Not in English

_____ TRNA ____
Transmittal New Application

OUTGOING

_____CTMS ____
Misc. Office Action

_____ 1449 ____
Signed 1449

_____ 892 ____
892

_____ ABN ____
Abandonment

_____ APDEC ____
Board of Appeals Decision

_____ APEA ____
Examiner Answer

_____ CTAV ____
Count Advisory Action

_____ CTEQ ____
Count Ex parte Quayle

_____ CTFR ____
Count Final Rejection

_____ CTNF ____
Count Non-Final

_____ CTRS ____
Count Restriction

_____ EXIN ____
Examiner Interview

_____ M903 ____
DO/EO Acceptance

_____ M905 ____
DO/EO Missing Requirement

_____ NFDR ____
Formal Drawing Required

_____ NOA ____
Notice of Allowance

_____ PETDEC____
Petition Decision

INCOMING

_____ AP.B ____
Appeal Brief

_____C.AD ____
Change of Address

_____ N/AP ____
Notice of Appeal

_____ PA.. ____
Change in Power of Attorney

_____ REM ____
Applicant Remarks in Amendment

_____ XT/ ____
Extension of Time filed separate

Internal

_____ SRNT____
Examiner Search Notes

_____ CLMPTO ____
PTO Prepared Complete Claim Set

_____ ECBOX ____
Evidence Copy Box Identification

_____ WCLM ____
Claim Worksheet

_____ WFEE ____
Fee Worksheet

File Wrapper

_____ FWCLM ____
File Wrapper Claim

_____ IIFW ____
File Wrapper Issue Information

_____ SRFW ____
File Wrapper Search Info

REV 7/02/03